

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method for delivering multicast data traffic originating in a broadcast-based computer network to a plurality of destinations on a connection-based network, the method comprising:
 - a) ~~providing a bridge device connecting the broadcast-based network and the connection-based network, the device comprising a bridge for providing one or more ports at which virtual channels in the connection-based network can terminate~~ a unidirectional connection between a local interface port associated with said broadcast-based network and a remote interface port associated with said connection-based network;
 - b) at said device, associating said remote interface port with a multicast address;
 - c) setting up a point-to-multipoint virtual channel in over the connection-based network, the point-to-multipoint virtual channel having a root at a first one of the ports said remote interface port and a plurality of leaves at destination nodes in the connection-based network;
~~in a filtering database associated with the bridge, associating the first one of the ports with one or more multicast addresses; and,~~
 - d) at the bridge forwarding multicast data frames addressed to the multicast address and originating in the broadcast-based computer network to the first one of the ports from said remote interface port to said destination nodes.
2. (Original) The method of claim 1 wherein the broadcast-based network comprises an ethernet network and the data frames comprise ethernet data frames.
3. (Currently amended) The method of claim 1 wherein the connection-based network comprises an asynchronous transfer mode network and the point-to-multipoint virtual channel comprises a multipoint ATM virtual circuit having a root associated with ~~the first one of the ports~~ said remote interface port.

4. (Original) The method of claim 3 wherein the broadcast-based network comprises an ethernet network and the data frames comprise ethernet data frames.
5. (Currently amended) The method of claim ~~4~~ 49 comprising providing in the connection-based network a unicast point-to-point virtual channel ~~connecting at least a first~~ for establishing a bidirectional connection between one of the destination nodes to a second one of the ports and a further output interface of said device.
6. (Currently amended) The method of claim 5 comprising, ~~at the bridge, forwarding data traffic destined for the first one of the destination nodes which is not associated with the one or more multicast addresses to the second one of the ports~~ performing bidirectional return control messaging between said one of the destination nodes and said further output interface.
7. (Currently amended) The method of claim 5 comprising providing in the connection-based network a point-to-point virtual channel connecting each of the destination nodes to a ~~different one of the ports~~ respective additional output interface.
8. (Currently amended) ~~The method of claim 7 comprising~~ A method for delivering multicast data traffic originating in a broadcast-based computer network to a plurality of destinations on a connection-based network, the method comprising:
 - providing a bridge connecting the broadcast-based network and the connection-based network, the bridge providing one or more ports at which virtual channels in the connection-based network can terminate;
 - setting up a point-to-multipoint virtual channel in the connection-based network, the point-to-multipoint virtual channel having a root at a first one of the ports and a plurality of leaves at destination nodes in the connection-based network;
 - in a filtering database associated with the bridge, associating the first one of the ports with one or more multicast addresses;

at the bridge forwarding multicast data frames addressed to the multicast address and originating in the broadcast-based computer network to the first one of the ports;

providing in the connection-based network a point-to-point virtual channel connecting at least a first one of the destination nodes to a second one of the ports;

providing in the connection-based network a point-to-point virtual channel connecting each of the destination nodes to a different one of the ports; and,

configuring the first one of the ports as a unidirectional port and subsequently discarding any data received at the bridge by way of the first one of the ports.

9. (Currently amended) The method of claim 1 wherein the association of the multicast address and ~~the first one of the ports~~ said remote interface port is a static association.
10. (Cancelled).
11. (Original) The method of claim 1 wherein the broadcast-based computer network constitutes a segment of a virtual local area network having a plurality of segments and the destination nodes comprise bridges connecting the connection-based network to other segments of the virtual local area network.
12. (Original) The method of claim 11 wherein the broadcast-based network comprises an ethernet network and the data frames comprise ethernet data frames.
- 13 to 17. (Cancelled).
18. (Currently amended) ~~The method of claim 17 comprising~~ A method for delivering multicast data traffic originating in a broadcast-based computer network to a plurality of destinations on a connection-based network, the method comprising:

providing a bridge connecting the broadcast-based network and the connection-based network, the bridge providing one or more ports at which virtual channels in the connection-based network can terminate;

setting up a point-to-multipoint virtual channel in the connection-based network, the point-to-multipoint virtual channel having a root at a first one of the ports and a plurality of leaves at destination nodes in the connection-based network;

in a filtering database associated with the bridge, associating the first one of the ports with one or more multicast addresses;

at the bridge forwarding multicast data frames addressed to the multicast address and originating in the broadcast-based computer network to the first one of the ports;

wherein the broadcast-based computer network constitutes a segment of a virtual local area network having a plurality of segments and the destination nodes comprise bridges connecting the connection-based network to other segments of the virtual local area network;

providing in the connection-based network a point-to-point virtual channel connecting at least a first one of the destination nodes to a second one of the ports;

providing in the connection-based network a point-to-point virtual channel connecting each of the destination nodes to a different one of the ports; and,

configuring the first one of the ports as a unidirectional port and subsequently discarding any data received at the bridge by way of the first one of the ports.

19 to 22. (Cancelled).

23. (Original) The method of claim 12 comprising forwarding video data to the plurality of destinations by way of the point-to-multipoint virtual channel.

24. (Original) The method of claim 23 comprising forwarding control signals associated with the video data over the point-to-point virtual channel to a source of the video data on the broadcast-based network.

25. (Original) The method of claim 12 comprising forwarding audio data to the plurality of destinations by way of the point-to-multipoint virtual channel.
26. (Cancelled).
27. (Original) The method of claim 1 comprising transmitting data in the broadcast-based network in frames and transmitting data in the connection-based network in fixed-size cells wherein the frames are not equal in size to the cells.
28. (Original) The method of claim 27 wherein the frames are variable-size frames.
29. (Currently amended) The method of claim 28 wherein the connection-based network comprises an asynchronous transfer mode network and the point-to-multipoint virtual channel comprises a multipoint ATM virtual circuit having a root associated with ~~the first one of the ports and the method comprises carrying the~~ said remote interface port, wherein said frames are carried in cells according to the AAL5 protocol.
30. (Original) The method of claim 11 comprising configuring the virtual local area network by applying a spanning tree protocol and, in applying the spanning tree protocol, ignoring the point-to-multipoint virtual channel.
31. (Currently amended) The method of claim 5 comprising configuring the point-to-multipoint and point-to-point virtual channels to provide specific levels of quality of service ~~which are different from one another.~~
- 32 to 35. (Cancelled).
36. (Currently amended) A method for carrying multicast data traffic originating at a source segment of a virtual network to a plurality of destination segments of the virtual network, the source and plurality of destination segments each connected to a connection-based network by a respective bridge, the method comprising:

at a first bridge connected to the source segment, providing a unidirectional connection between a local interface port associated with said source segment of the virtual network and a first remote interface port associated with said connection-based network, and associating at least one a multicast address with a said first remote interface port and configuring the remote interface port as an ingress-only port;

provisioning in the connection-based network a point-to-multipoint virtual channel having a root endpoint at the first remote interface port and a plurality of leaf endpoints at a plurality of destination nodes;

directing multicast data ~~addressed to the at least one~~ having said multicast address from said source segment of the virtual network to the first remote interface ~~bridge~~ port; and,

passing the multicast data to the destination segments by way of the point-to-multipoint virtual channel.

37. (Currently amended) The method of claim 36 wherein the leaf endpoints are each at a port on one of the bridge bridges associated with one of the destination segments ~~and the method comprises configuring the ports on the bridges associated with each of the destination segments as egress-only ports.~~

38. (Currently amended) The method of claim 37 comprising providing a bidirectional point-to-point virtual channel in the connection-based network having an endpoint at a second remote interface port of the first bridge and another endpoint ~~connected to and receive data from~~ on one of the bridges associated with one of the destination segments.

39 and 40. (Cancelled).

41. (Currently amended) A bridge device connected between a first network and a second network comprising:

~~a network interface configured to receive a bridge for transmitting~~ variable sized data frames received from a said first network at a local interface port to a first remote interface port, said bridge comprising a unidirectional connection between the local interface port and the first remote interface port;

~~a plurality of bridge ports;~~
~~a switching fabric configurable to provide data connections~~
~~between the bridge ports for switching said variable sized data frames~~
~~from said first remote interface port to and a plurality of external data~~
~~connections, the external data connections each associated with one of~~
~~one or more output interfaces, each of said output interfaces connected to~~
~~said second network;~~

~~a point-to-multipoint virtual channel configured in the switching~~
~~fabric, the point-to-multipoint virtual channel having a root at a first one~~
~~of the bridge ports and a plurality of leaves, the leaves each connected to~~
~~one of the external data connections; and,~~

~~a filtering database associated with the bridge, the filtering~~
~~database containing comprising a first entry associating one or more~~
~~multicast addresses with the first one of the bridge ports for mapping an~~
~~address of said local interface port with an address of said first remote~~
~~interface port for enabling configuration of a point-to-multipoint virtual~~
~~channel with a root at said bridge and a plurality of leaves each~~
~~connected to one of said output interfaces.~~

42. (Currently amended) The bridge device of claim 41 wherein the switching fabric comprises an ATM switching fabric and the point-to-multipoint virtual channel comprises a multipoint ATM virtual circuit.
43. (Currently amended) The bridge device of claim 42 ~~comprising wherein~~
said filtering database further comprises a second entry for mapping the
address of said local interface port with an address of a second remote
interface port of said bridge for providing a point-to-point virtual channel
~~configured in the switching fabric, the point-to-point virtual channel~~
~~connecting a second one of the ports to a second one of the external data~~
~~connections, the first and second ones of the external data connections~~
~~extending to a common destination node~~ for enabling exchange of
bidirectional control information with a remote node.
44. (Currently amended) The bridge device of claim 41 wherein the first entry is a static entry and the bridge is configured to forward to ~~the first~~
said first remote interface port only those frames which have a multicast
address which matches the static entry.

45. (Currently amended) A virtual local area network comprising:
 a plurality of segments interconnected by a connection-based network;
 a bridge associated with each of the ~~segments~~ segments, each bridge connecting a corresponding one of the segments to the connection-based ~~network~~;
~~network, wherein~~ network, wherein a first bridge associated with a first one of the segments, ~~the first bridge comprising~~ comprises a plurality of bridge ports each a local interface port connected to the first segment and a plurality of remote interface ports, each remote interface port capable of being connected to a virtual channel in the connection-based network, said first bridge providing a unidirectional connection between said local interface port and a first remote interface port;
 a point-to-multipoint virtual channel in the connection-based network, the point-to-multipoint virtual channel having a root node associated with ~~a first one of the bridge ports~~ said first remote interface port and a plurality of leaf nodes, each of the leaf nodes connected to one of the bridges corresponding to another one of the segments;
 a point-to-point virtual channel in the connection-based network, the point-to-point virtual channel connecting ~~a second one of the bridge ports~~ a second remote interface port to one of the bridges corresponding to another one of the segments.
46. (Original) The local area network of claim 45 wherein the point-to-point virtual channel provides a bidirectional data connection and the point-to-multipoint virtual channel provides a unidirectional data connection.
47. (Original) The local area network of claim 45 wherein the first network segment comprises an ethernet network segment.
48. (Original) The local area network of claim 47 wherein the connection-based network comprises an asynchronous transfer mode network and the point-to-multipoint virtual channel comprises a point-to-multipoint virtual circuit.

49. (New) The method of claim 1 wherein step c) comprises:
- c1) establishing said point-to-multipoint virtual channel within said device between said remote interface port and a plurality of output interfaces based on said multicast address; and
 - c2) establishing, across said connection-based network, a virtual connection between each said output interface and a respective destination node of said destination nodes.